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|---|---|--------------------------|-----------------------|------------------------|-----------------|
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | Complete if Known | | | |
| | | Application Number | 09/928,590 | | |
| | | Filing Date | August 13, 2001 | | |
| | | First Named Inventor | Spence, Charles F. | | |
| | | Art Unit | 1753 | | |
| | | Examiner Name | Jeffrey Thomas Barton | | |
| Sheet | 1 | of | 5 | Attorney Docket Number | 20174C-000620US |

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|------------------------|--------------------------|--|--------------------------------|--|---|
| Examiner Initials* | Cite No. ¹ | Document Number | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
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PTO/SB/08A&B (08-03)

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| JS | 0054 | WO | 98/10267 | A | 03-12-98 | | | <input type="checkbox"/> |
| Examiner Signature | | | | | Date Considered | 4/14/06 | | |

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| JS | 0065 | GB | 2264496 | | 01-09-93 | | | <input type="checkbox"/> |

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| Examiner Initials * | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
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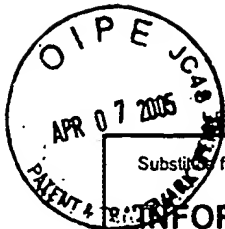
PTO/SB/05A&B (08-03)

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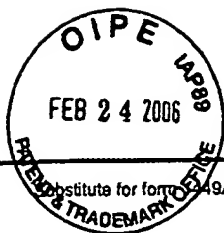
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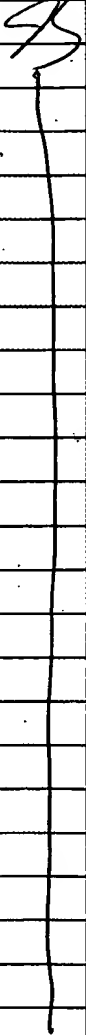

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| | | Filing Date | August 13, 2001 | | |
| | | First Named Inventor | Charles F. Spence | | |
| | | Art Unit | 1753 | | |
| | | Examiner Name | Jeffrey Thomas Barton | | |
| Sheet | 3 | of | 13 | Attorney Docket Number | 20174C-000620US |

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| Examiner Initials ¹ | Cite No. ¹ | Document Number | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
| | | Number Kind Code ² (if known) | | | |
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| | | Country Code ² | Number ⁴ | Kind Code ³ (if known) | | | | |
| JS | B1 | EP | 0 592 094 | A2 | 04-13-1994 | International Business Machines Corporation | | <input type="checkbox"/> |
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| | B4 | EP | 0 778 351 | B1 | 06-11-1997 | Hitachi, Ltd. | | <input type="checkbox"/> |
| | B5 | EP | 0 779 436 | A2 | 06-18-1997 | Frank T. Hartley | | <input type="checkbox"/> |
| | B6 | EP | 0 829 360 | A2 | 03-18-1998 | Xerox Corporation | | <input type="checkbox"/> |
| | B7 | EP | 0 845 603 | A1 | 06-03-1998 | Xerox Corporation | | <input type="checkbox"/> |
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| | B9 | GB | 2 155 152 | A | 09-18-1985 | Allied Corporation | | <input type="checkbox"/> |
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| | B11 | GB | 2 308 460 | A | 06-25-1997 | Daewoo Electronics Co., Ltd. | | <input type="checkbox"/> |
| | B12 | WO | 95/33853 | A1 | 12-14-1995 | University Of Tennessee Research Corporation | | <input type="checkbox"/> |
| | B13 | WO | 97/38300 | A1 | 10-16-1997 | Soane Biosciences | | <input type="checkbox"/> |
| | B14 | WO | 98/07069 | A1 | 02-19-1998 | The Regents Of The University Of Michigan | | <input type="checkbox"/> |
| | B15 | WO | 99/00655 | A2 | 01-07-1999 | Immunetics | | <input type="checkbox"/> |
| | B16 | WO | 99/04361 | A1 | 01-28-1999 | Diversified Scientific, Inc. | | <input type="checkbox"/> |
| JS | B17 | WO | 99/17093 | A1 | 04-08-1999 | The Regents Of The University Of Michigan | | <input type="checkbox"/> |

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| | | Country Code ² | Number ⁴ | Kind Code ⁵ (if known) | | | | |
| JS | B18 | WO | 99/36760 | A1 | 07-22-1999 | Genetic Microsystems, Inc. | | <input type="checkbox"/> |
| | B19 | WO | 99/52633 | A1 | 10-21-1999 | Lumenal Technologies, L.P. | | <input type="checkbox"/> |
| | B20 | WO | 00/00678 | A1 | 01-06-2000 | University Of Washington | | <input type="checkbox"/> |
| | B21 | WO | 00/43748 | A1 | 07-27-2000 | YSI Incorporated | | <input type="checkbox"/> |
| JS | B22 | WO | 00/60345 | A1 | 10-12-2000 | University Of Alabama At Birmingham Research Foundation | | <input type="checkbox"/> |

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| JS | C1 | "Chapter 9: Microfluidic Devices," Micromachined Transducers Sourcebook, pp. 779-882, 1998 | <input type="checkbox"/> |
| | C2 | AHN, CHONG H. et al., "Fluid Micropumps Based On Rotary Magnetic Actuators," Proceedings of 1995 IEEE Micro Electro Mechanical Systems Workshop (MEMS '95), Amsterdam, Netherlands, pp. 408-412, January 29 - February 2, 1995 | <input type="checkbox"/> |
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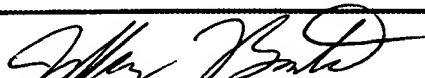
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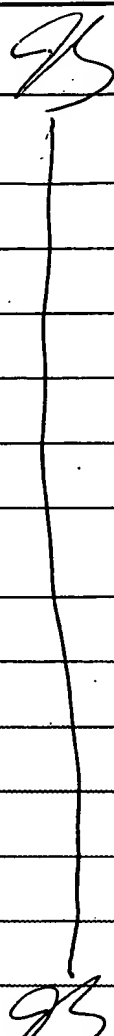
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| | C54 | LAMMERINK, T. S. J. et al., "Modular Concept For Fluid Handling Systems," IEEE, pp. 389-394, 1996 | <input type="checkbox"/> |
| | C55 | LESSARD, GUILLAUME A. et al., "A Scanning Apertureless Fluorescence Microscope," 8 pages, no date | <input type="checkbox"/> |
| | C56 | LEVINE, LEANNA M. et al., "Measurement Of Specific Protease Activity Utilizing Fluorescence Polarization," Analytical Biochemistry, Vol. 247, pp. 83-88, 1997 | <input type="checkbox"/> |
| | C57 | LIN, L. Y. et al., "Free-Space Micromachined Optical Switches For Optical Networking," IEEE Journal of Selected Topics in Quantum Electronics, Vol. 5, No. 1, pp. 4-9, January 1999 | <input type="checkbox"/> |
| | C58 | LÖTTERS, J C et al., "The Mechanical Properties Of The Rubber Elastic Polymer Polydimethylsiloxane For Sensor Applications," J. Micromech. Microeng., Vol. 7, pp. 145-147, 1997 | <input type="checkbox"/> |
| | C59 | LUCY, CHARLES A. et al., "Characterization Of The Cationic Surfactant Induced Reversal Of Electroosmotic Flow In Capillary Electrophoresis," Anal. Chem., Vol. 68, pp. 300-305, 1996 | <input type="checkbox"/> |

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| | | Filing Date | August 13, 2001 | | |
| | | First Named Inventor | Charles F. Spence | | |
| | | Art Unit | 1753 | | |
| Examiner Name | Jeffrey Thomas Barton | | | | |
| Sheet | 10 | of | 13 | Attorney Docket Number | 20174C-000620US |

| NON PATENT LITERATURE DOCUMENTS | | | |
|---------------------------------|--|---|--------------------------|
| Examiner Initials * | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| JS | C60 | MARSHALL, SID, "Fundamental Changes Ahead For Lab Instrumentation," R&D Magazine, 5 pages, February 1999 | <input type="checkbox"/> |
| | C61 | MARSILI, RAY, "Lab-On-A-Chip Poised To Revolutionize Sample Prep," R&D Magazine, 5 pages, February 1999 | <input type="checkbox"/> |
| | C62 | MAULE, JOHN, "Pulsed-Field Gel Electrophoresis," Molecular Biotechnology, Vol. 9, pp. 107-126, 1998 | <input type="checkbox"/> |
| | C63 | MULLER, RICHARD S. et al., "Surface-Micromachined Microoptical Elements And Systems," Proceedings of the IEEE, Vol. 86, No. 8, pp. 1705-1720, August 1998 | <input type="checkbox"/> |
| | C64 | MURRAY, VINCENT et al., "Detection Of Polymorphisms Using Thermal Cycling With A Single Oligonucleotide On A DNA Sequencing Gel," Human Mutation, Vol. 2, pp. 118-122, 1993 | <input type="checkbox"/> |
| | C65 | NAKAMURA, YUSUKE et al., "Variable Number Of Tandem Repeat (VNTR) Markers For Human Gene Mapping," Science, Vol. 235, pp. 1616-1622, March 27, 1987 | <input type="checkbox"/> |
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| | C67 | O'REILLY, MARIE-ANNE J. et al., "The Technique Of Pulsed Field Gel Electrophoresis And Its Impact On Molecular Immunology," Journal of Immunological Methods, Vol. 131, pp. 1-13, 1990 | <input type="checkbox"/> |
| | C68 | PETHIG, RONALD et al., "Applications Of Dielectrophoresis In Biotechnology," Tibtech, Vol. 15, pp. 426-432, October 1997 | <input type="checkbox"/> |
| | C69 | PETTY, JEFFREY T. et al., "Characterization Of DNA Size Determination Of Small Fragments By Flow Cytometry," Anal. Chem., Vol. 67, pp. 1755-1761, 1995 | <input type="checkbox"/> |
| | C70 | QIN, DONG et al., "Elastomeric Light Valves," Adv. Mater., Vol. 9, No. 5, pp. 407-410, 1997 | <input type="checkbox"/> |
| | C71 | QIN, DONG et al., "Photolithography With Transparent Reflective Photomasks," J. Vac. Sci. Technol. B, Vol. 16, No. 1, pp. 98-103, January 1998 | <input type="checkbox"/> |
| | C72 | RAPP, R. et al., "LIGA Micropump For Gases And Liquids," Sensors and Actuators A, Vol. 40, pp. 57-61, January 1994 | <input type="checkbox"/> |
| | C73 | ROUHI, MAUREEN, "Sizing, Sorting DNA One Piece At A Time," C&EN, pp. 5-6, January 11, 1999 | <input type="checkbox"/> |
| | C74 | ROYLANCE, LYNN MICHELLE et al., "A Batch-Fabricated Silicon Accelerometer," IEEE Transactions on Electron Devices, Vol. ED-26, No. 12, pp. 1911-1917, December 1979 | <input type="checkbox"/> |
| C75 | SAMAD, AKHTAR et al., "Optical Mapping: A Novel, Single-Molecule Approach To Genomic Analysis," Genome Research, pp. 1-4, 1995 | <input type="checkbox"/> | |
| C76 | Sandia National Laboratories, "Electro Microfluidic Dual In-Line Package (EMDIP)," 2 pages, no date | <input type="checkbox"/> | |


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| | | | | Examiner Name | Jeffrey Thomas Barton |
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| NON PATENT LITERATURE DOCUMENTS | | | |
|---------------------------------|-----------------------|---|--|
| Examiner Initials * | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| JS | C77 | SANJOH, AKIRA et al., "Spatiotemporal Protein Crystal Growth Studies Using Microfluidic Silicon Devices," Journal of Crystal Growth, Vol. 196, pp. 691-702, 1999 | <input type="checkbox"/> |
| | C78 | SCHUELLER, OLIVIER J. A. et al., "Fabrication Of Glassy Carbon Microstructures By Soft Lithography," Sensors and Actuators A, Vol. 72, pp. 126-139, 1999 | <input type="checkbox"/> |
| | C79 | SCHWARTZ, DAVID C. et al., "Optical Mapping Approaches To Molecular Genomics," Current Opinion in Biotechnology, Vol. 8, pp. 70-74, 1997 | <input type="checkbox"/> |
| | C80 | SEETHALA, RAMAKRISHNA et al., "A Fluorescence Polarization Competition Immunoassay For Tyrosine Kinases," Analytical Biochemistry, Vol. 255, pp. 257-262, 1998 | <input type="checkbox"/> |
| | C81 | SHOJI, SHUICHI, "Fluids For Sensor Systems," Topics in Current Chemistry, Vol. 194, pp. 163-188, 1998 | <input type="checkbox"/> |
| | C82 | SHOJI, SHUICHI et al., "Smallest Dead Volume Microvalves For Integrated Chemical Analyzing Systems," Transducers '91, 1991 International Conference on Solid-State Sensors and Actuators, San Francisco, California, pp. cover, 1052-1055, 1991 | <input type="checkbox"/> |
| | C83 | SMITS, J.G., "Piezoelectric Micropump With Three Valves Working Peristaltically," Sensors and Actuators, Vol. A21-A23, pp. 203-206, 1990 | <input type="checkbox"/> |
| | C84 | TATARI, ZOHREH et al., "HLA-Cw Allele Analysis By PCR-Restriction Fragment Length Polymorphism: Study Of Known And Additional Alleles," Proc. Natl. Acad. Sci. USA, Vol. 92, pp. 8803-8807, September 1995 | <input type="checkbox"/> |
| | C85 | TUFTE, O. N. et al., "Silicon Diffused-Element Piezoresistive Diaphragms," Journal of Applied Physics, Vol. 33, No. 11, pp. 3322-3327, November 1962 | <input type="checkbox"/> |
| | C86 | Ullmann's Encyclopedia of Industrial Chemistry, Sections 6 to 6.3, Topic: Carbon Black, Sixth Edition, 7 pages, 1999 | <input type="checkbox"/> |
| | C87 | VAN DE POL, F.C.M. et al., "A Thermo-Pneumatic Actuation Principle For A Microminiature Pump And Other Micromechanical Devices," Sensors and Actuators, Vol. 17, Nos. 1-2, pp. 139-143, May 3, 1989 | <input type="checkbox"/> |
| | C88 | VAN DE POL, F.C.M. et al., "Micro Liquid Handling Devices - A Review," Micro Systems Technologies, Vol. 90, pp. 799-805, 1990 | <input type="checkbox"/> |
| | C89 | VAN DEN BERG, A. et al., "Micro Total Analysis Systems," Proceedings of the μ TAS '94 Workshop, University of Twente, The Netherlands, 17 pages, November 21-22, 1994 | <input type="checkbox"/> |
| | C90 | VAN DILLA, MARVIN A. et al., "Chapter 2 - Introduction And Resume Of Flow Cytometry And Sorting," Flow Cytometry and Sorting, John Wiley & Sons, pp. 5 cover pages and 11-37, 1979 | <input type="checkbox"/> |
| | JS | C91 | VERPOORTE, ELISABETH M. J. et al., "Three-Dimensional Micro Flow Manifolds For Miniaturized Chemical Analysis Systems," J. Micromech. Microeng., Vol. 7, pp. 246-256, 1994 |

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| NON PATENT LITERATURE DOCUMENTS | | | |
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| Examiner Initials * | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| | C92 | VIEIDER, CHRISTIAN et al., "A Pneumatically Actuated Micro Valve With A Silicon Rubber Membrane For Integration With Fluid Handling Systems," Transducers '95, 8th International Conference on Solid-State Sensors and Actuators and Eurosensors IX, Stockholm, Sweden, pp. 284-286, June 25-29, 1995 | <input type="checkbox"/> |
| | C93 | VOLKMUTH, W. D. et al., "DNA Electrodiffusion In A 2D Array Of Posts," Physical Review Letters, Vol. 72, No. 13, pp. 2117-2120, March 28, 1994 | <input type="checkbox"/> |
| | C94 | VOLKMUTH, W. D. et al., "DNA Electrophoresis In Microlithographic Arrays," Nature, Vol. 358, pp. 600-602, August 13, 1992 | <input type="checkbox"/> |
| | C95 | WASHIZU, MASAO et al., "Molecular Dielectrophoresis Of Biopolymers," IEEE Transactions on Industry Applications, Vol. 30, No. 4, pp. 835-843, July 1994 | <input type="checkbox"/> |
| | C96 | WILBUR, JAMES L. et al., "Lithographic Molding: A Convenient Route To Structures With Sub-Micrometer Dimensions," Adv. Mater., Vol. 7, No. 7, pp. 649-652, 1995 | <input type="checkbox"/> |
| | C97 | XIA, YOUNAN et al., "Complex Optical Surfaces Formed By Replica Molding Against Elastomeric Masters," Science, Vol. 273, pp. 347-349, July 19, 1996 | <input type="checkbox"/> |
| | C98 | XIA, YOUNAN et al., "Micromolding Of Polymers In Capillaries: Applications In Microfabrication," Chem. Mater., Vol. 8, No. 7, pp. 1559-1566, 1996 | <input type="checkbox"/> |
| | C99 | XIA, YOUNAN et al., "Reduction In The Size Of Features Of Patterned SAMs Generated By Microcontact Printing With Mechanical Compression Of The Stamp," Adv. Mater., Vol. 7, No. 5, pp. 471-473, 1995 | <input type="checkbox"/> |
| | C100 | XU, BING et al., "Making Negative Poisson's Ratio Microstructures By Soft Lithography," Adv. Mater., Vol. 11, No. 14, pp. 1186-1189, 1999 | <input type="checkbox"/> |
| | C101 | XU, XIANG et al., "Detection Of Programmed Cell Death Using Fluorescence Energy Transfer," Nucleic Acids Research, Vol. 26, No. 8, pp. 2034-2035, 1998 | <input type="checkbox"/> |
| | C102 | YANG, XING et al., "A Low Power MEMS Silicone/Parylene Valve," Solid-State Sensor and Actuator Workshop, Hilton Head Island, South Carolina, 4 pages, June 7-11, 1998 | <input type="checkbox"/> |
| | C103 | YANG, XING et al., "A MEMS Thermopneumatic Silicone Membrane Valve," IEEE 10th Annual International Workshop of Micro Electro Mechanical Systems, Nagoya, Japan, pp. cover, 114-118, January 26-30, 1997 | <input type="checkbox"/> |
| | C104 | YAZDI, NAVID et al., "Micromachined Inertial Sensors," Proceedings of IEEE, Vol. 86, No. 8, pp. 1640-1659, August 1998 | <input type="checkbox"/> |
| | C105 | YOUNG, A. M. et al., "Contoured Elastic-Membrane Microvalves For Microfluidic Network Integration," Journal of Biomechanical Engineering, Vol. 121, pp. 2-6, February 1999 | <input type="checkbox"/> |
| | C106 | ZENGERLE, R. et al., "A Micro Membrane Pump With Electrostatic Actuation," Micro Electro Mechanical Systems '92, Travemünde, Germany, pp. 19-24, February 4-7, 1992 | <input type="checkbox"/> |

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| <i>JS</i> | C107 | ZENGERLE, R. et al., "Performance Simulation Of Microminiaturized Membrane Pumps," 7th International Conference on Solid-State Sensors and Actuators, Yokohama, Japan, pp. 2 cover pages, 106-109, June 7-10, 1993 | <input type="checkbox"/> |

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